

March 16, 2012

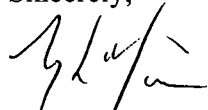
Mr. Jason Gunter  
Remedial Project Manager  
U.S. Environmental Protection Agency  
Region 7 - Superfund Branch  
901 North 5<sup>th</sup> Street  
Kansas City, KS 66101

**Re: National Mine Tailings Site Progress Report**

Dear Mr. Gunter:

As required by Article VI, Section 51 of the Unilateral Administrative Order (Docket No. CERCLA-07-2006-0231) for the referenced project and on behalf of The Doe Run Company and NL Industries, Inc., the progress report for the period January 1, 2012 through January 31, 2012 is enclosed. If you have any questions or comments, please call me at 573-638-5020 or Mark Nations at 573-518-0600.

Sincerely,

A handwritten signature in black ink, appearing to read "Ty L. Morris".

Ty L. Morris, P.E., R.G.  
Vice President

TLM/jms  
Enclosure

c: Mark Nations – TDRC  
Matt Wohl – TDRC (electronic only)  
Kevin Lombardozzi – NL Industries, Inc.  
John Kennedy – City of Park Hills  
Norm Lucas – Park Hills – Leadington Chamber of Commerce  
Kathy Rangen – MDNR  
Tim Skoglund – Barr Engineering

**RECEIVED**

**MAR 22 2012**

**SUPERFUND DIVISION**

40383875



Superfund

**National Mine Tailings Site**  
Park Hills, Missouri  
**Removal Action - Monthly Progress Report**  
Period: January 1, 2012 – January 31, 2012

**1. Actions Performed and Problems Encountered This Period:**

- a. Work at the site continued on the task of covering the southern slope of the main chat pile with rock. This work included placing a 6-inch layer of crushed rock filter on the graded surface and a 12-inch layer of slope riprap on top of the crushed rock filter. As of the end of the period, work on this task had been completed.
- b. Work at the site continued on the task of covering the down chute on the southern slope of the main chat pile with rock. This work included placing a 6-inch layer of crushed rock filter on the graded surface, a 12-inch layer of slope riprap on top of the crushed rock filter, and a 36-inch layer of Type 4 riprap on the slope riprap. As of the end of the period, work on this task had been completed.
- c. Work on the Piramal Glass property located west of the Lee Mechanical office building continued. This work focused on surveying the area for the purposes of developing the design for completing grade work in this area. As of the end of the period, work on this task had been completed.
- d. Work at the site continued on the task of removing excess slope fill from the top of the main chat pile. This work focused on surveying the top of the main chat pile to determine how much additional work was needed to construct this area to the final subgrade elevations. The results of this survey indicated that there was still 1.0 to 3.0 feet of excess slope fill over a majority of the top. Work on removing this material will begin next period.
- e. Work at the site resumed on the task of stripping mine waste and contaminated soil from the Thin Tailings Area. This work focused on the area between Northing Coordinates N736750 and N739000 from the haul road to the material that was left in place over top of the sewer line along Flat River. This work stripped quite a bit of material and lowered the elevations of the area to similar elevations as the process water swale that flows across the area. Subsequent XRF testing indicated that the remaining soil still had significantly elevated levels of lead. Following the testing, Doe Run submitted a request to stop stripping activities in this area to avoid constructing a large ponding area. Instead, Doe Run proposed to grade the area to drain without doing any further stripping and then cover the area with rock using the rocking scheme that is being used on the main chat pile and slopes around the site. This request was approved by the EPA project manager. The analytical results for the XRF testing are included with this progress report.
- f. Work at the site also began on the task of modifying the southern slope of the stormwater detention basin in the West Area. This work was done so that a City of Park Hills storm sewer outlet from Buckley Street could be drained into the stormwater detention basin. This work was not part of the original design as the storm sewer outlet was not known about until it was discovered during the work on this area. Modifications to this slope include adjusting the alignment and installing an extension on the storm sewer outlet. As of the end of the period, a majority of the southern slope had been rebuilt, but work had not yet been completed on extending the storm sewer outlet. Revised version of Construction Drawings C-10 and C-11 are included with this progress report.
- g. Work at the site continued on the task of meeting with the landowners who may be affected by the removal action activities. This included meeting with landowners who signed an access agreement prior to April 1, 2008, which needed to be amended, as well as landowners who have not signed agreements. As of the end of the period, the following had been accomplished:

Landowners that own property within the site boundary

Total number of landowners = 22

Landowners who signed an access agreement prior to 04/01/08 = 18

Landowners who signed an access agreement after 04/01/08 = 1

Landowners who are reviewing the access agreement = 3

Landowners who have refused to sign the access agreement = 0

Landowners who still need to be met with concerning the access agreement = 0

Total number of landowners who need to sign the amendment letter = 18

Landowners who have signed the amendment letter = 16

Landowners who are reviewing the amendment letter = 1

Landowners who refused to sign the amendment letter = 0

Landowners who still need to be met with concerning the amendment letter = 1

(Changes in the total number of landowners and the total number of landowners who need to sign the amendment letter are as a result of sales that occurred since the meetings with the landowners began.)

Landowners that own property immediately adjacent to the site boundary

Total number of landowners = 27

Landowners who signed an access agreement prior to 04/01/08 = 11

Landowners who signed an access agreement after 04/01/08 = 6

Landowners who are reviewing the access agreement = 4

Landowners who have refused to sign the access agreement = 3

Landowners who still need to be met with concerning the access agreement = 3

Total number of landowners who need to sign the amendment letter = 11

Landowners who have signed the amendment letter = 11

Landowners who are reviewing the amendment letter = 0

Landowners who refused to sign the amendment letter = 0

Landowners who still need to be met with concerning the amendment letter = 0

(It is not anticipated that it will be a challenge to work around the property owned by the three landowners that refused to sign the access agreement based on location of the property in relationship to the work that needs to be completed. Changes in the total number of landowners and the total number of landowners who need to sign the amendment letter are as a result of sales that occurred since the meetings with the landowners began.)

## **2. Analytical Data and Results Received This Period:**

- a. During this period, water samples were collected at the sampling locations identified in Appendix C of the Removal Action Work Plan where water was present. Copies of the analytical results from the last sampling event are included with this progress report.
- b. During this period, the Ambient Air Monitoring Report for November 2011 and December 2011 were received. Any issues identified in these reports are discussed below. A copy of these documents has been sent to your attention.

The November 2011 Ambient Air Monitoring Report noted the following:

- The action levels for lead and dust were not exceeded.
- No samples were taken with the TSP and PM<sub>10</sub> monitors on 11/14/11 due to training.
- No samples were taken with the TSP and PM<sub>10</sub> monitors on 11/23/11, 11/24/11, 11/25/11, and 11/26/11 due to the holiday.

The December 2011 Ambient Air Monitoring Report noted the following:

- The action levels for lead and dust were not exceeded.
- No samples were taken with the National #2 (Soccer Field) TSP monitor on 12/6/11 and 12/12/11 due to electrical issues. Upon discovery, the issue was corrected.
- No samples were taken with the Big River #4 QA TSP monitor on 12/20/11 due to mechanical failure. Upon discovery, the issue was corrected.
- No samples were taken with the TSP and PM<sub>10</sub> monitors on 12/22/11, 12/23/11, 12/26/11, 12/29/11, and 12/30/11 due to the holiday.

## **3. Developments Anticipated and Work Scheduled for Next Period:**

- a. Finish grading activities in the Thin Tailings Area.

- b. Begin rocking the portion of the Thin Tailings Area between the haul road and the sewer line from Northing Coordinate N736750 to Northing Coordinate N739000.
- c. Continue removing slope fill from the top of the main chat pile.
- d. Install the extension to the City of Park Hills stormwater pipe.
- e. Finish constructing the south slope of the stormwater detention pond in the West Area.
- f. Begin rocking the south slope of the stormwater detention pond in the West Area.
- g. Finalize the detailed design on the portion of the Piramal Glass property located west of the Lee Mechanical office building.
- h. Continue constructing the eastern buttressing slope between Northing Coordinates N737900 and N738400.
- i. Complete monthly water sampling activities as described in the Removal Action Work Plan.
- j. Complete air monitoring activities as described in the Removal Action Work Plan.
- k. Continue efforts to contact and meet with the landowners identified as potentially being affected by the removal action activities so that access agreements can be obtained.

**4. Changes in Personnel:**

- a. None.

**5. Issues or Problems Arising This Period:**

- a. None.

**6. Resolution of Issues or Problems Arising This Period:**

- a. None.

**End of Monthly Progress Report**



February 01, 2012

Allison Olds  
Barr Engineering Company  
1001 Diamond Ridge  
Suite 1100  
Jefferson City, MO 65109  
TEL: (573) 638-5007  
FAX: (573) 638-5001



**RE:** National MTS-25/86-0003

**WorkOrder:** 12010903

Dear Allison Olds:

TEKLAB, INC received 1 sample on 1/25/2012 10:41:00 AM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,



Michael L. Austin  
Project Manager  
(618)344-1004 ex 16  
MAustin@teklabinc.com



## Report Contents

<http://www.teklabinco.com/>

**Client:** Barr Engineering Company

**Work Order:** 12010903

**Client Project:** National MTS-25/86-0003

**Report Date:** 01-Feb-12

**This reporting package includes the following:**

Cover Letter	1
Report Contents	2
Definitions	3
Case Narrative	4
Laboratory Results	5
Sample Summary	6
Dates Report	7
Quality Control Results	8
Receiving Check List	13
Chain of Custody	Appended

**Client:** Barr Engineering Company

**Work Order:** 12010903

**Client Project:** National MTS-25/86-0003

**Report Date:** 01-Feb-12

### Abbr Definition

- CCV Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
- DF Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
- DNI Did not Ignite
- DUP Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
- ICV Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
- IDPH IL Dept. of Public Health
- LCS Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
- LCSD Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
- MB Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
- MDL Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
- MS Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
- MSD Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
- MW Molecular weight
- ND Not Detected at the Reporting Limit
- NELAP NELAP Accredited
- PQL Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
- RL The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
- RPD Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
- SPK The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
- Surr Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
- TNTC Too numerous to count ( > 200 CFU )

### Qualifiers

- |  |   |
|--|---|
| # - Unknown hydrocarbon                                | B - Analyte detected in associated Method Blank |
| E - Value above quantitation range                     | H - Holding times exceeded                      |
| M - Manual Integration used to determine area response | ND - Not Detected at the Reporting Limit        |
| R - RPD outside accepted recovery limits               | S - Spike Recovery outside recovery limits      |
| X - Value exceeds Maximum Contaminant Level            |   |



## Case Narrative

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12010903

Client Project: National MTS-25/86-0003

Report Date: 01-Feb-12

Cooler Receipt Temp: 3.2 °C

### Locations and Accreditations

Collinsville		Springfield		Kansas City	
Address	5445 Horseshoe Lake Road Collinsville, IL 62234-7425	Address	3920 Pintail Dr Springfield, IL 62711-9415	Address	8421 Nieman Road Lenexa, KS 66214
Phone	(618) 344-1004	Phone	(217) 698-1004	Phone	(913) 541-1998
Fax	(618) 344-1005	Fax	(217) 698-1005	Fax	(913) 541-1998
Email	jhriley@teklabinc.com	Email	kmccclain@teklabinc.com	Email	dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2013	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2013	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2012	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2012	Springfield
Arkansas	ADEQ	88-0966		3/14/2012	Collinsville
Illinois	IDPH	17584		4/30/2012	Collinsville
Kentucky	UST	0073		5/26/2012	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2012	Collinsville

Client: Barr Engineering Company

Work Order: 12010903

Client Project: National MTS-25/86-0003

Report Date: 01-Feb-12

Lab ID: 12010903-001

Client Sample ID: Nat-East

Matrix: AQUEOUS

Collection Date: 01/24/2012 14:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
<b>EPA 600 375.2 REV 2.0 1993 (TOTAL)</b>								
Sulfate	NELAP	75		214	mg/L	1	01/27/2012 20:09	R159326
<i>Results of MS/MSD have less certainty because value(s) exceed upper quantitation limits.</i>								
<b>STANDARD METHOD 18TH ED. 4500-H B, LABORATORY ANALYZED</b>								
Lab pH	NELAP	1.00		8.18		1	01/26/2012 14:10	R159192
<b>STANDARD METHODS 18TH ED. 2340 C</b>								
Hardness, as ( CaCO <sub>3</sub> )	NELAP	5		480	mg/L	1	01/25/2012 14:50	R159170
<b>STANDARD METHODS 18TH ED. 2540 C (TOTAL)</b>								
Total Dissolved Solids	NELAP	20		584	mg/L	1	01/26/2012 14:28	R159237
<b>STANDARD METHODS 18TH ED. 2540 D</b>								
Total Suspended Solids	NELAP	6	R	< 6	mg/L	1	01/27/2012 9:32	R159247
<i>RPD was outside the QC limits due to low level results. When duplicate results for TSS are 20 mg/L or less and have a difference of no greater than the PQL, the results are considered within the precision of the test method and are reportable.</i>								
<b>STANDARD METHODS 18TH ED. 2540 F</b>								
Solids, Settleable	NELAP	0.1		< 0.1	ml/L	1	01/25/2012 12:53	R159156
<b>STANDARD METHODS 18TH ED. 5310 C, ORGANIC CARBON</b>								
Total Organic Carbon (TOC)	NELAP	1.0		1.0	mg/L	1	01/26/2012 18:27	R159214
<b>EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)</b>								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	01/27/2012 16:20	74624
Zinc	NELAP	10.0		49.3	µg/L	1	01/26/2012 22:49	74624
<b>EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)</b>								
Cadmium	NELAP	2.00		< 2.00	µg/L	1	01/26/2012 13:24	74598
Zinc	NELAP	10.0		85.4	µg/L	1	01/26/2012 13:24	74598
<b>STANDARD METHODS 18TH ED. 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)</b>								
Lead	NELAP	2.00	X	12.6	µg/L	1	01/27/2012 9:32	74611
<b>STANDARD METHODS 18TH ED. 3030 E, 3113 B, METALS BY GFAA</b>								
Lead	NELAP	4.00	X	41.6	µg/L	2	01/26/2012 16:17	74600



## Sample Summary

<http://www.teklabinc.com/>

**Client:** Barr Engineering Company  
**Client Project:** National MTS-25/86-0003

**Work Order:** 12010903  
**Report Date:** 01-Feb-12

Lab Sample ID	Client Sample ID	Matrix	Fractions	Collection Date
12010903-001	Nat-East	Aqueous	5	01/24/2012 14:00

## Dates Report

<http://www.teklabinc.com/>
**Client:** Barr Engineering Company

**Work Order:** 12010903

**Client Project:** National MTS-25/86-0003

**Report Date:** 01-Feb-12

Sample ID	Client Sample ID Test Name	Collection Date	Received Date Prep Date/Time	Analysis Date/Time
12010903-001A	Nat-East Standard Methods 18th Ed. 2540 F	01/24/2012 14:00	1/25/2012 10:41:00 AM	01/25/2012 12:53
12010903-001B	Nat-East EPA 600 375.2 Rev 2.0 1993 (Total) Standard Method 18th Ed. 4500-H B, Laboratory Analyzed Standard Methods 18th Ed. 2340 C Standard Methods 18th Ed. 2540 C (Total) Standard Methods 18th Ed. 2540 D	01/24/2012 14:00	1/25/2012 10:41:00 AM	01/27/2012 20:09 01/26/2012 14:10 01/25/2012 14:50 01/26/2012 14:28 01/27/2012 9:32
12010903-001C	Nat-East EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total) Standard Methods 18th Ed. 3030 E, 3113 B, Metals by GFAA	01/24/2012 14:00	1/25/2012 10:41:00 AM 01/25/2012 15:05 01/25/2012 15:37	01/26/2012 13:24 01/26/2012 16:17
12010903-001D	Nat-East EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved) EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved) Standard Methods 18th Ed. 3030 B, 3113 B, Metals by GFAA (Dissolved)	01/24/2012 14:00	1/25/2012 10:41:00 AM 01/26/2012 10:54 01/26/2012 10:54 01/26/2012 7:53	01/26/2012 22:49 01/27/2012 16:20 01/27/2012 9:32
12010903-001E	Nat-East Standard Methods 18th Ed. 5310 C, Organic Carbon	01/24/2012 14:00	1/25/2012 10:41:00 AM	01/26/2012 18:27



## Quality Control Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12010903

Client Project: National MTS-25/86-0003

Report Date: 01-Feb-12

### EPA 600 375.2 REV 2.0 1993 (TOTAL)

Batch R159326 SampType: MBLK Units mg/L

SampID: ICB/MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	75		< 75						01/27/2012

Batch R159326 SampType: MBLK Units mg/L

SampID: MBLK DI

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	75		< 75						01/27/2012

Batch R159326 SampType: LCS Units mg/L

SampID: ICV/LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	75		146	150	0	97.4	90	110	01/27/2012

Batch R159326 SampType: MS Units mg/L

SampID: 12010903-001B MS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Sulfate	75	E	306	100	214.5	91.2	85	115	01/27/2012

Batch R159326 SampType: MSD Units mg/L

SampID: 12010903-001B MSD

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Sulfate	75	E	304	100	214.5	89.8	305.6	0.43	01/27/2012

### STANDARD METHOD 18TH ED. 4500-H B, LABORATORY ANALYZED

Batch R159192 SampType: LCS Units

SampID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Lab pH	1.00		7.02	7.00	0	100.3	99.1	100.8	01/26/2012

Batch R159192 SampType: DUP Units

SampID: 12010903-001BDUP

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Lab pH	1.00		8.20				8.180	0.24	01/26/2012

### STANDARD METHODS 18TH ED. 2340 C

Batch R159170 SampType: MBLK Units mg/L

SampID: MB-R159170

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hardness, as ( CaCO <sub>3</sub> )	5		< 5						01/25/2012



Client: Barr Engineering Company  
 Client Project: National MTS-25/86-0003

Work Order: 12010903  
 Report Date: 01-Feb-12

## STANDARD METHODS 18TH ED. 2340 C

Batch R159170		SampType: LCS		Units mg/L						
SampID: LCS-R159170										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hardness, as ( CaCO3 )		5		1000	1000	0	100.0	90	110	01/25/2012

Batch R159170		SampType: MS		Units mg/L						
SampID: 12010903-001BMS										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Hardness, as ( CaCO3 )		5		880	400	480.0	100.0	85	115	01/25/2012

Batch R159170		SampType: MSD		Units mg/L				RPD Limit 10		
SampID: 12010903-001BMSD										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Hardness, as ( CaCO3 )		5		880	400	480.0	100.0	880.0	0.00	01/25/2012

## STANDARD METHODS 18TH ED. 2540 C (TOTAL)

Batch R159237		SampType: MBLK		Units mg/L						
SampID: MBLK										Date
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Analyzed	
Total Dissolved Solids	20		< 20						01/26/2012	
Total Dissolved Solids	20		< 20						01/26/2012	

Batch R159237		SampType: LCS		Units mg/L						
SampID: LCS										Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Total Dissolved Solids		20		982	1000	0	98.2	90	110	01/26/2012

Batch R159237		SampType: LCSQC		Units mg/L						
SampID: LCSQC										
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Dissolved Solids		20		998	1000	0	99.8	90	110	01/26/2012

Batch R159237		SampType: MS		Units mg/L						Date Analyzed
SampID: 12010903-001B MS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Total Dissolved Solids	20		1100	500	584.0	103.6	85	115	01/26/2012	

Batch R159237		SampType: MSD		Units mg/L				RPD Limit 15		
SampID: 12010903-001B MSD										Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	
Total Dissolved Solids		20		1110	500	584.0	105.6	1102	0.90	01/26/2012

Client: Barr Engineering Company

Work Order: 12010903

Client Project: National MTS-25/86-0003

Report Date: 01-Feb-12

**STANDARD METHODS 18TH ED. 2540 D**
**Batch R159247 SampType: MBLK Units mg/L**

SampleID: MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Suspended Solids	6.00		< 6.00						01/27/2012
Total Suspended Solids	6		< 6						01/27/2012

**Batch R159247 SampType: LCS Units mg/L**

SampleID: LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Suspended Solids	6		96	100	0	96.0	85	115	01/27/2012
Total Suspended Solids	6		108	100	0	108.0	85	115	01/27/2012
Total Suspended Solids	6		100	100	0	100.0	85	115	01/27/2012
Total Suspended Solids	6		105	100	0	105.0	85	115	01/27/2012
Total Suspended Solids	6		98	100	0	98.0	85	115	01/27/2012
Total Suspended Solids	6		90	100	0	90.0	85	115	01/27/2012
Total Suspended Solids	6		96	100	0	96.0	85	115	01/27/2012

**Batch R159247 SampType: DUP Units mg/L**

SampleID: 12010903-001B DUP

RPD Limit 15

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Date Analyzed
Total Suspended Solids	6	R	6				0	200.00	01/27/2012

**STANDARD METHODS 18TH ED. 5310 C, ORGANIC CARBON**
**Batch R159214 SampType: MBLK Units mg/L**

SampleID: ICB/MBLK

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)	1.0		< 1.0						01/26/2012

**Batch R159214 SampType: LCS Units mg/L**

SampleID: ICV/LCS

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Total Organic Carbon (TOC)	5.0		49.0	48.2	0	101.7	89.6	109.5	01/26/2012

**EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)**
**Batch 74624 SampType: MBLK Units µg/L**

SampleID: MB-74624

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		< 2.00	2.00	0	0	-100	100	01/27/2012
Zinc	10.0		< 10.0	10.0	0	0	-100	100	01/26/2012

**Batch 74624 SampType: LCS Units µg/L**

SampleID: LCS-74624

Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed
Cadmium	2.00		47.9	50.0	0	95.8	85	115	01/27/2012
Zinc	10.0		436	500	0	87.2	85	115	01/26/2012

Client: Barr Engineering Company

Work Order: 12010903

Client Project: National MTS-25/86-0003

Report Date: 01-Feb-12

**EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)**

Batch 74624		SampType: MS		Units µg/L						
SampID: 12010903-001DMS									Date Analyzed	
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit		
Cadmium	2.00		46.7	50.0	0.3	92.8	75	125	01/27/2012	
Zinc	10.0		457	500	49.3	81.6	75	125	01/26/2012	

Batch 74624		SampType: MSD		Units µg/L				RPD Limit 20		
SampID: 12010903-001DMSD										Date
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD	Analyzed	
Cadmium	2.00		46.4	50.0	0.3	92.2	46.7	0.64	01/27/2012	
Zinc	10.0		454	500	49.3	81.0	457.4	0.68	01/26/2012	

**EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)**

Batch 74598		SampType: MBLK		Units µg/L						
SampID: MB-74598										Date
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Analyzed	
Cadmium	2.00		< 2.00	2.00	0	0	-100	100	01/26/2012	
Zinc	10.0		< 10.0	10.0	0	0	-100	100	01/26/2012	

Batch 74598		SampType: LCS		Units µg/L						
SampID: LCS-74598										Date
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Analyzed	
Cadmium	2.00		49.7	50.0	0	99.4	85	115	01/26/2012	
Zinc	10.0		525	500	0	105.0	85	115	01/26/2012	

Batch 74598		SampType: MS		Units µg/L						
SampID: 12010903-001CMS										
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Cadmium	2.00		48.2	50.0	0.5	95.4	75	125	01/26/2012	
Zinc	10.0		612	500	85.4	105.2	75	125	01/26/2012	

Batch 74598		SampType: MSD		Units µg/L				RPD Limit 20		
SampID: 12010903-001CMSD									Date Analyzed	
Analyses	RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Cadmium	2.00		47.7	50.0	0.5	94.4	48.2	1.04	01/26/2012	
Zinc	10.0		614	500	85.4	105.7	611.5	0.39	01/26/2012	

**STANDARD METHODS 18TH ED. 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)**

Batch 74611		SampType: MBLK		Units µg/L							
SampID: MB-74611											
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	Date Analyzed	
Lead		2.00		< 2.00	2.00	0	0	-100	100	01/26/2012	

Client: Barr Engineering Company

Work Order: 12010903

Client Project: National MTS-25/86-0003

Report Date: 01-Feb-12

**STANDARD METHODS 18TH ED. 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)**

Batch 74611		SampType: LCS		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Lead		2.00		15.5	15.0	0	103.2	85	115	01/27/2012

Batch 74611		SampType: MS		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Lead		2.00		25.4	15.0	12.6426	85.2	70	130	01/27/2012

Batch 74611		SampType: MSD		Units µg/L						RPD Limit 20	Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Lead		2.00		26.5	15.0	12.6426	92.6	25.4202	4.29		01/27/2012

**STANDARD METHODS 18TH ED. 3030 E, 3113 B, METALS BY GFAA**

Batch 74600		SampType: MBLK		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Lead		2.00		< 2.00	2.00	0	0	-100	100	01/26/2012

Batch 74600		SampType: LCS		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Lead		2.00		13.0	15.0	0	86.5	85	115	01/26/2012

Batch 74600		SampType: MS		Units µg/L						Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	Low Limit	High Limit	
Lead		4.00		58.7	15.0	41.616	114.1	70	130	01/26/2012

Batch 74600		SampType: MSD		Units µg/L						RPD Limit 20	Date Analyzed
Analyses		RL	Qual	Result	Spike	SPK Ref Val	%REC	RPD Ref Val	%RPD		
Lead		4.00		58.7	15.0	41.616	114.1	58.724	0.02		01/26/2012



## Receiving Check List

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12010903

Client Project: National MTS-25/86-0003

Report Date: 01-Feb-12

Carrier: Ricky Schmidt

Received By: SRH

Completed by:

On:

25-Jan-12

Timothy W. Mathis

Reviewed by:

On:

25-Jan-12

Michael L. Austin

Pages to follow: Chain of custody

1

Extra pages included

0

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>	Temp °C 3.2
Type of thermal preservation?	None <input type="checkbox"/>	Ice <input checked="" type="checkbox"/>	Blue Ice <input type="checkbox"/>	Dry Ice <input type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
Reported field parameters measured:	Field <input type="checkbox"/>	Lab <input type="checkbox"/>	NA <input checked="" type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		
<div>When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.</div>				
Water - at least one vial per sample has zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials <input checked="" type="checkbox"/>	
Water - TOX containers have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No TOX containers <input checked="" type="checkbox"/>	
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>		

Any No responses must be detailed below or on the COC.

Custody seal intact upon courier pick up. RLS 1/26/12



# Teklab Chain of Custody

Pg. 1 of 1

Workorder 12010903

5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618)344-1004 ~ Fax: (618)344-1005

Barr Engineering Co.

1001 Diamond Ridge, Suite 1100

Jefferson City

MO

65109

National MTS - 25/86-0003

Are the samples chilled? ☒ Yes ☐ No with: ☒ Ice ☐ Blue ice

Cooler Temp 32 Sampler Chris Schulte

Preserved in ☒ Lab ☐ Field**Teklab, Inc.**  
**Courier PickUp**

Comments

Invoice to Mark Nations. Results to Allison Olds and Mark Nations, mnations@doerun.com

Matrix is surface water.

Metals = Cd, Pb, Zn

Custody Seal intact upon pick up 1/25/12

Contact Allison Olds

eMail aolds@barr.com

Phone 573-638-5007 Requested Due Date Standard

Billing/PO Per contract with Doe Run

Lab Use	Sample ID	Sample Date/Time	Preservative Matrix	pH	T.S.S.	Total Dissolved Solids	Sulfate	Settleable Solids	T.O.C	Total Metals	Dissolved Metals	Hardness			
12010903 C01	Nat-East	1-24-12/14:00	Unpres 5 Aqueous	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Unpres Aqueous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Unpres Aqueous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Unpres Aqueous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Unpres Aqueous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Unpres Aqueous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Unpres Aqueous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			Unpres Aqueous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Relinquished By *	Date/Time	Received By	Date/Time
W. Sander / Barr	1-24-12 / 15:00	R. Schulte	1-25-12 09:15
R. Schulte	1-25-12 10:41	Seifer Haynes	1-25-12 10:41

\* The individual signing this agreement on behalf of client acknowledges that they have read and understand the terms of this agreement and that they have the authority to sign on behalf of client.

# Soil Sampling Data Form

Yard ID \_\_\_\_\_

Property Address Nation 21 Site

Date 02 Feb 12

Owner Name Between Walk trail & Bulk Tank

North of process water outlet Phone \_\_\_\_\_

Owner address (if different from above) \_\_\_\_\_

Person Authorizing Access: \_\_\_\_\_ Phone \_\_\_\_\_

Signature (optional): \_\_\_\_\_ Relation to owner \_\_\_\_\_

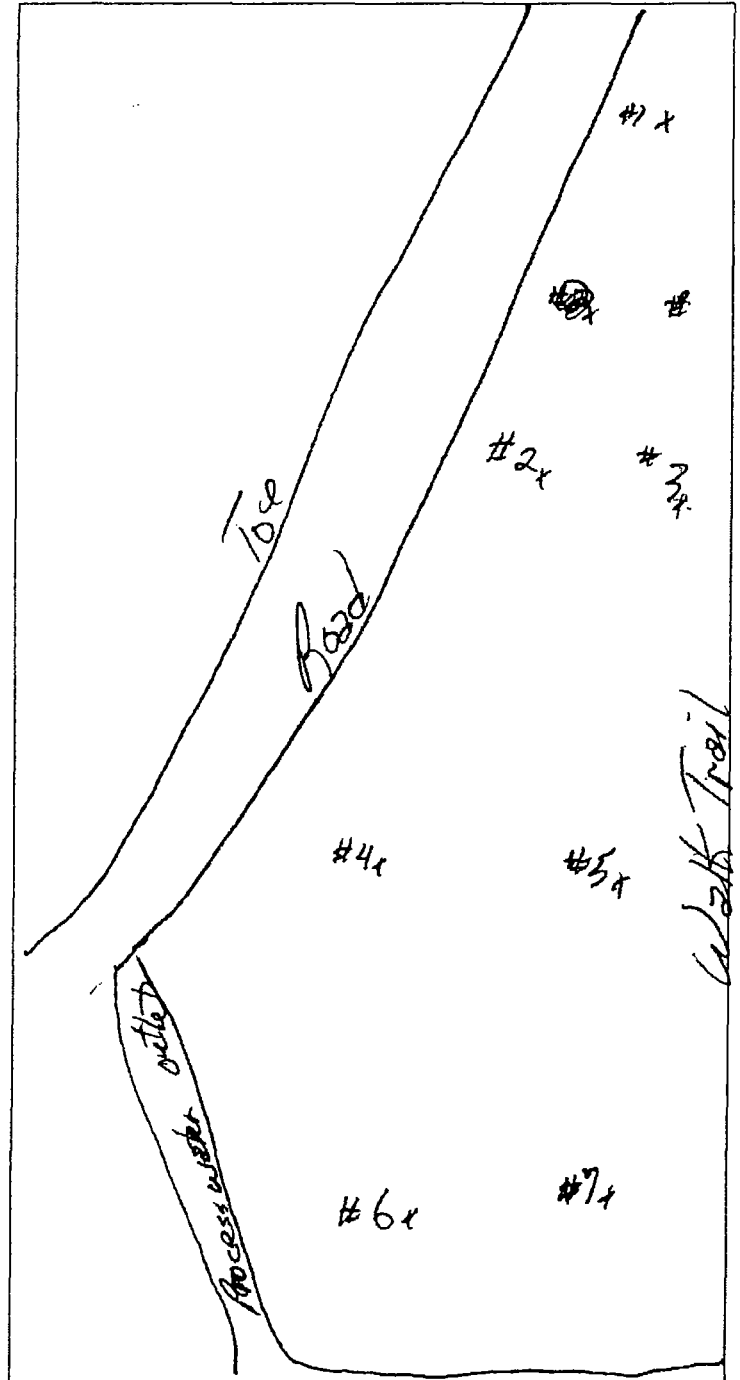
Sample ID	Sample Description	Sample Result
#1		571 ppm
#2		1118 ppm
#3		1152 ppm
#4		1483 ppm
#5		649 ppm
#6		2194 ppm
#7		8077 ppm
		ppm
		ppm
		ppm
		ppm
		ppm
		ppm

Notes:

Grab samples Air dried  
and analyzed in lab/office

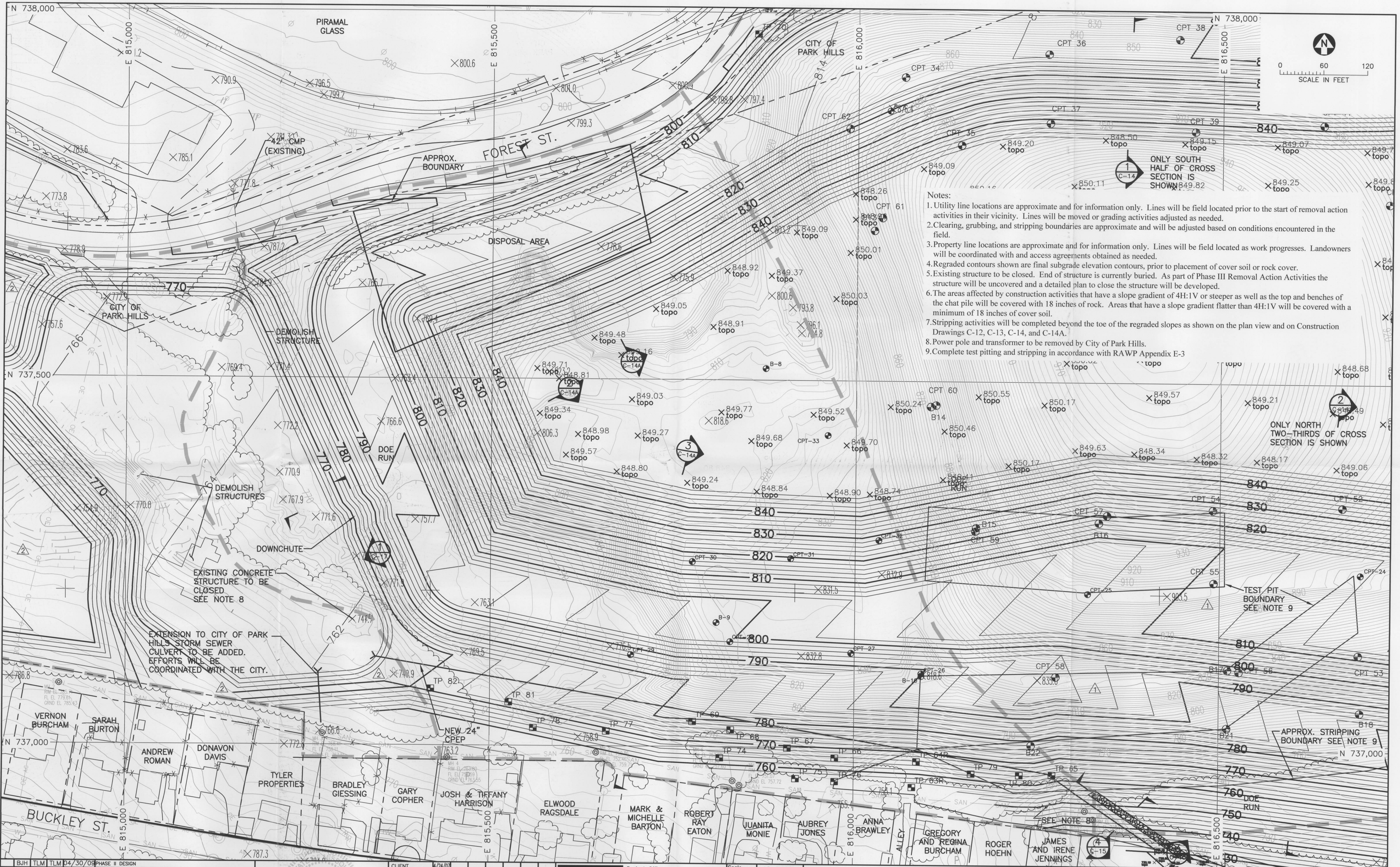
Sampling Team Initials: SPH

Site Schematic



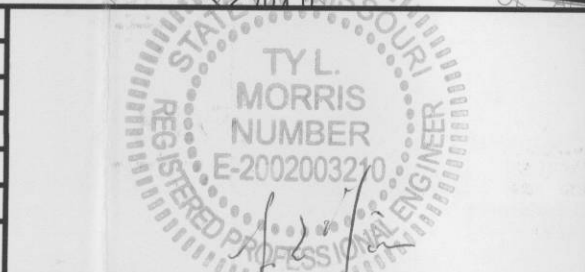


CADD USER: Chris M. Schulte FILE: M:\CADD\2586003\PHASE III CONSTRUCTION DRAWINGS\DESIGN\CONSTRUCTION DRAWINGS\REVIEWS\25822\_4.DWG PLOT SCALE: 1:1 PLOT DATE: 04/26/2007 19:46:06  
J:\M\2586003\25822\_1.DWG Plot at 1 04/26/2007 19:46:06



- Notes:
1. Utility line locations are approximate and for information only. Lines will be field located prior to the start of removal action activities in their vicinity. Lines will be moved or grading activities adjusted as needed.
  2. Clearing, grubbing, and stripping boundaries are approximate and will be adjusted based on conditions encountered in the field.
  3. Property line locations are approximate and for information only. Lines will be field located as work progresses. Landowners will be coordinated with and access agreements obtained as needed.
  4. Regraded contours shown are final subgrade elevation contours, prior to placement of cover soil or rock cover.
  5. Existing structure to be closed. End of structure is currently buried. As part of Phase III Removal Action Activities the structure will be uncovered and a detailed plan to close the structure will be developed.
  6. The areas affected by construction activities that have a slope gradient of 4H:1V or steeper as well as the top and benches of the chat pile will be covered with 18 inches of rock. Areas that have a slope gradient flatter than 4H:1V will be covered with a minimum of 18 inches of cover soil.
  7. Stripping activities will be completed beyond the toe of the regraded slopes as shown on the plan view and on Construction Drawings C-12, C-13, C-14, and C-14A.
  8. Power pole and transformer to be removed by City of Park Hills.
  9. Complete test pitting and stripping in accordance with RAWP Appendix E-3

NO.	BY	CHK	APP.	DATE	REVISION DESCRIPTION
1	BJH	TLM	TLM	04/30/09	PHASE II DESIGN
2	CMS2	TLM	TLM	04/30/10	PHASE III DESIGN
3	CMS2	TLM	TLM	02/8/11	REVISED CONTOURS FOR SE CORNER OF CHAT PILE
4	CMS2	AJN	TLM	12/16/11	REVISED CONTOURS WEST AREA



CLIENT	4/24/07
BID	
CONSTRUCTION	4/30/08 4/30/10 2/8/11 12/16/11
EPA	4/27/07 4/30/08 4/30/10 2/8/11 12/16/11
RELEASED TO/FOR	A B C O 1 2 3
DATE RELEASED	

**BARR**  
Corporate Headquarters:  
Minneapolis, Minnesota  
Ph: 1-800-632-2277

Project Office:  
**BARR ENGINEERING CO.**  
3236 EMERALD LANE  
JEFFERSON CITY, MO 65109  
Ph: 1-888-324-3933  
Fax: (573) 636-9001  
www.barr.com

Scale	AS SHOWN
Date	08/01/06
Drawn	DMD
Checked	TWS
Designed	TLM
Approved	TLM

**THE**  
**DOE RUN**  
**COMPANY**

NATIONAL MINE TAILINGS SITE PARK HILLS, MISSOURI - PHASE III REMOVAL ACTION		BARR PROJECT No. <b>25/86-003</b>
LOWER CHAT PILE		CLIENT PROJECT No.
DWG. No. <b>C-10</b>	REV. No. <b>2</b>	



